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FUTURES GROUP GLASTONBURY CT
ALTERNATIVE FUTURE SCENARIOS FOR THE NATIONAL AVIATION SYSTEM. --ETC(U)
FEB 77 E FEIN, C DONAHUE, M OPPENHEIMER DOT-FA6WA-3855
276-72-05/01 NL

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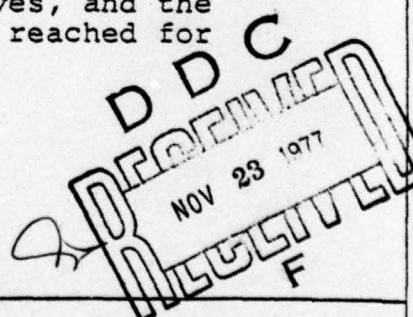
1. Report No. ⑭ 276-72-05/01	2. Government Accession No. ⑮	3. Recipient's Catalog No. ⑯ 1252P
6 ALTERNATIVE FUTURE SCENARIOS FOR THE NATIONAL AVIATION SYSTEM. ⑰ 1. Executive Summary (4 volumes)		5. Report Date ⑪ February 1977
7. Author(s) ⑩ E. Fein, C. Donahue, M. Oppenheimer, D. Goodrich H. Becker		6. Performing Organization Code
9. Performing Organization Name and Address The Futures Group 124 Hebron Avenue Glastonbury, Connecticut 06033		8. Performing Organization Report No. 276-72-05
12. Sponsoring Agency Name and Address Federal Aviation Administration System Concepts Branch, AVP-110 800 Independence Avenue, S.W. Washington, D.C. 20591		10. Work Unit No. ⑮
15. Supplementary Notes ⑨ Final rept. 30 Jan 76 - 30 Jan 77		11. Contract or Grant No. DOT-FA6WA-3855
		13. Type of Report and Period Covered FINAL 6/30/76 - 1/30/77
		14. Sponsoring Agency Code FAA AVP-110
16. Abstract Vol 2 A046 743 744 This study updated and expanded the five socioeconomic scenarios prepared for the FAA in the prior study similarly titled. These scenarios were revised to reflect changes in conditions since the original study and to incorporate new material that may better aid the FAA in policy analysis. Scenario sections on economics were greatly augmented to give substantive descriptions of the economic and financial processes, and a new sector on international conditions was added to each scenario.		
This volume contains an overview of study methods and results. Summaries are given of the five scenario narratives, and the chronology of key scenario events and the levels reached for major scenario variables are presented.		
17. Key Words Scenario International Socioeconomic	18. Distribution Statement Document is available to the public through the National Technical Information Service, Springfield, Virginia 22161	
19. Security Classif. (of this report) Unclassified	20. Security Classif. (of this page) Unclassified	21. No. of Pages 46
22. Price		

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Report 276-72-05/01

ALTERNATIVE FUTURE SCENARIOS
FOR THE NATIONAL AVIATION SYSTEM

Vol. 1: Executive Summary

A report prepared for

System Concepts Branch
Federal Aviation Administration
Department of Transportation
Contract DOT FA6WA-3855

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February 1977

ACCESSION for	
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DDC	Buff Section <input type="checkbox"/>
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PREFACE

This volume is one of four covering the work done in revising the five socioeconomic scenarios developed for the Federal Aviation Administration (FAA) in the study entitled, "Alternative Future Scenarios for the National Aviation System."* That study was directed at depicting various alternative future conditions that may exist in the United States and may impact on the National Aviation System (NAS).

While the basic positions differentiating the scenarios are the same here as in the previous study, insights into socioeconomic changes gained during the preceding 18 months have been incorporated into this study. New variables have been selected to better characterize the alternative "external worlds" which may influence the development of the NAS. New events important to shaping the nature of these worlds have been identified and incorporated into the scenarios. Furthermore, the scenario sections on economics have been greatly augmented to give substantive descriptions of the economic and financial processes in each scenario, and a new section dealing with international conditions has been added to each of the scenarios.

Each of the five scenarios describes an alternative path of socioeconomic evolution to the year 2000. The appropriate NAS that was described for each scenario in the previous study is not included in this revision. The five scenarios, however, can be used as the point of departure from which the

*Alternative Future Scenarios for the National Aviation System, Report 174-72-01, prepared for the Systems Concepts Branch, Federal Aviation Administration (Glastonbury, CT: The Futures Group, August 1975).

appropriate future NAS may be developed for each scenario, as was done in the previous study.

These scenarios are not intended to be forecasts of future conditions. Rather they attempt to describe a range of plausible socioeconomic conditions important to the future of air transportation so that those involved with designing and assessing aviation system policies might have a framework for policy synthesis and evaluation. Hence the reader should view the conditions depicted in each scenario as if he or she were recalling a history of U.S. conditions from a vantage point sometime after the year 2000.

This volume contains an overview of study methods and results. Summaries are given of the five scenario narratives, and the chronology of key scenario events and the levels reached for major scenario variables are presented.

The other volumes in this series are

- Volume 2: Scenario Descriptions and Graphics
- Volume 3: Methods and Data for Projecting the Variables
- Volume 4: Supporting Documentation

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Other Volumes (Bound under separate cover)

Volume 2: Scenario Descriptions and Graphics

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Volume 3: Methods and Data for Projecting the Variables

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INTRODUCTION

The five scenarios presented here are intended to describe the range of plausible "external worlds" that may determine the development of the future National Aviation System (NAS). These scenarios represent differing combinations of economic growth, population growth, and approaches to resource problems. They describe socioeconomic conditions in the United States and discuss this country's role in international affairs. While the scenarios are necessarily general in their discussion of alternative trends, quantified projections have been made for selected variables for each scenario. These variables characterize the socioeconomic and international conditions and provide a measure of the differences between the scenarios.

The scenarios may be used to suggest alternative evolutions of the NAS by developing the aviation system appropriate to the world described in each scenario. Developing an NAS for each scenario was not part of this present work. However, as in the previous study where such was done,* the scenario narratives provide a basis for understanding the social, political, economic, and international environments which may influence the NAS.

A scenario is not a forecast per se but rather a plausible description of what might occur. This form of presentation is intended to describe events and trends as they could evolve. The likelihood of any particular scenario actually being realized may be quite low for several reasons. For

*Alternative Future Scenarios for the National Aviation System, Report 174-72-01, prepared for the Systems Concepts Branch, Federal Aviation Administration (Glastonbury, CT: The Futures Group, August 1975).

example, a number of events and trends are discussed explicitly in each scenario. But since the likelihood of occurrence of the bulk of these is less than unity, their product (that is, the overall probability of the scenario) must be small.

Furthermore, scenarios are necessarily incomplete for two basic reasons. First, in the interest of brevity, scenarios usually focus only on those aspects of the future believed to be crucial to the central problem being addressed--in this case, the socioeconomic environment which will influence the future of the National Aviation System. Second, some future developments are unforeseeable, that is, they are inaccessible by any forecasting technique.

The five scenarios developed for this study each represent differing solutions to the problems of economic growth and resource availability over the next 25 years. Table 1 compares the basic scenario positions. In selecting the scenario space to be covered, the role of national government was considered to be crucial in determining alternative future paths. Thus the scenarios are differentiated by governmental postures with regard to the currently existing and anticipated economic and resource problems as follows:

- The United States, faced with a sequence of problems at least partially attributable to a finite supply of resources, chooses to follow a path of deliberately limiting its economic growth rate (as described in the "Limited Growth" scenario).
- Technological progress leading to freedom from energy and environmental problems encourages a reduction in government regulation of industry and a rebirth of "free enterprise" (as described in the "Expansive Growth" scenario).
- Reacting to threatening economic problems, the United States chooses to move toward more centralized planning and is able to achieve high growth through government control of the economy (as described in the "Individual Affluence" scenario).

Table 1
BASIC SCENARIO POSITIONS

Characteristics	Resource Allocation Scenario R	Limited Growth Scenario A		Expansive Growth Scenario B		Individual Affluence Scenario C		Hardships Scenario D	
		Low (1.7 births per woman)	High (2.7 births per woman)	Low (1.7 births per woman)	High (4.9 percent average annual growth rate, 1976-2000)	Low (1.7 births per woman)	High (4.8 percent average annual growth rate, 1976-2000)	Low (1.9 percent average annual growth rate, 1976-2000)	
Population growth	Moderate (2.1 births per woman)	Low (1.7 births per woman)	High (2.7 births per woman)	Low (1.7 births per woman)	High (4.9 percent average annual growth rate, 1976-2000)	Low (1.7 births per woman)	High (4.8 percent average annual growth rate, 1976-2000)	Low (1.9 percent average annual growth rate, 1976-2000)	
Gross national product growth	Moderate (3.4 percent average annual growth rate, 1976-2000)	Low (1.5 percent average annual growth rate, 1976-2000)	High (4.9 percent average annual growth rate, 1976-2000)	Substantial control to achieve low growth	Little control, favoring a laissez-faire economy	Substantial regulation in a centrally directed economy	Ineffective and incapable of any sustained policy direction		
Government role	Substantial regulation for planned growth	High (7 percent)	Low (6 percent)	High (7 percent)	Low (6 percent)	Very low (5 percent)	Very high (9 percent)		
Unemployment rate*	Moderate (6.5 percent)	Emphasis on domestic sources and conservation	Limited exploitation of domestic resources	Limited exploitation of domestic resources	Full exploitation of domestic resources	Full exploitation of domestic resources	Limited exploitation of domestic resources		
Raw materials									
International relations	After a period of retrenchment, the United States provides a stabilizing influence in the last decade of the century	The United States withdraws from global leadership, unable to prevent the rise of strong cartels for most of its needed raw material imports	The United States is a dominant world power	The United States is a dominant world power	The United States is a dominant world power	The United States is a dominant world power	The United States is a dominant world power	The United States is a dominant world power	The United States is a dominant world power

*Five percent is assumed to be the full employment rate.

- The United States moves from crisis to crisis, attempting to "muddle through." Economic conditions become increasingly more difficult, and life in the United States is economically and emotionally depressed (as described in the "Hardships" scenario).
- The United States is set on a middle course in which the Government successfully deals with resource problems through the establishment of firm allocation mechanisms (as described in the "Resources Allocation" scenario).

While none of the scenarios is intended to be the most probable forecast, the "Resource Allocation" scenario is positioned in the middle of the scenario space. Its economic growth, population growth, and moderate technological developments place it between the four more or less optimistic scenarios. For this reason, rather than because it is necessarily the most probable, the "Resource Allocation" scenario is defined as the "median scenario."

Projections of the selected variables for each scenario were made on the basis of assumed growth rates or for the majority of the variables by the use of trend impact analysis,* a technique whereby projections based on historic trends are modified by events forecasted for a particular scenario. In constructing the scenarios, attempts were made to assure that events judged likely to occur in a scenario were not contradictory and that the projections of the variables were compatible with the characterization of the scenario. Where possible correlations or numerical relationships existed between the variables, these were explored to assure self-consistent projections. In examining the events and projections for consistency, institutional constraints which were already part of the system as well as those

*A trend projection technique developed several years ago by The Futures Group.

which might develop in the future were considered. Adjustments were incorporated where necessary to assure consistency among the projections of the variables and their compatibility with the sense of the scenario.

Projections were made for a total of 46 variables for each of the five scenarios. The full scenario narratives employ the results of these projections to describe the scenario developments. The major events which were used to impact the variables projected by trend impact analysis also have been introduced into the scenario narratives.

Every reader will have his or her own view of which of these scenarios seems most probable. The ultimate success of the scenarios, however, will be their ability to depict the broad range of plausible "external worlds" which should be studied in planning for future NAS developments.

SCENARIO SUMMARIES AND RESULTS

This section presents an overview of the narratives and a chronology of the major events and trends for each scenario, covering both domestic socioeconomic conditions and the role of the United States in international affairs. Graphical displays of some of the major variables projected for each scenario are shown after the last scenario narrative.

Resource Allocation, Scenario R (Median Scenario)

In the late 1970's the implications of the growing dependence on foreign sources of energy and other raw materials finally brought the environmentalists, the consumers, and the producers together. By that time the effect of material shortages was seriously threatening the nation's basic economic stability. Escalating prices for raw material imports made it clear that the United States no longer could command an unlimited share of world resources. The response was a dynamic move to bring supply and demand into balance both by developing indigenous resources and by allocating resources by nationally agreed upon priorities. In setting these priorities, full analyses were made of all the societal costs and benefits associated with resource exploitation and use. Before the century ended the United States had become an example of effective resource management for other nations.

LIFE IN AMERICA

A strong commitment to resource allocation was established by the end of the 1970's. The need to allocate resources was accepted as the public began to show sensitivity to the problems of meeting the demand for both material and energy resources. By the close of the twentieth century the United States had achieved a satisfactory balance between domestic and foreign resource supplies and national needs.

When initially proposed, these restrictions were seen by certain segments of the population as representing a denial of the opportunity for

self-improvement. The restrictions on resource usage also were seen as inhibiting economic growth, and neither private corporations (whose overriding motivations were growth and profitability) nor private individuals (whose demands were economic improvement) would volunteer to reduce consumption to levels that seemed necessary. Yet it became apparent to many members of society that the ability to meet resource and energy requirements of the economy, either through stimulation of supply or through curtailment of demand or both, would determine societal well-being for decades to come.

The economy's inability to satisfy demands for energy and raw materials in the 1970's, at historical prices, while adhering to environmental restraints, had the most visible impact on transportation. Here the average citizen was dismayed by increasing costs, and equipment shortages resulted in decreasing service in the form of delays and discomfort. Rising gasoline costs did little to relieve urban vehicular congestion, but it clarified the need for public mass transit. With transportation keyed closely to industrial needs and leisure time, failure to meet demand adequately in these areas had threatening feedback effects on all parts of the economy.

Because freedom of movement had always been correlated with societal and economic well-being, jeopardy to this freedom led to the realization that unless changes were made the choice was either environmentally unacceptable exploitation of domestic resources or dependency on foreign sources. The Resource Allocation Board, established in the late 1970's, was able to promulgate the idea of resource accountability, in terms of environmental impacts, social and economic impacts, and cost-benefit analyses for resource usage. By the end of the 1970's there was considerable debate about alternatives to existing patterns of resource consumption. This dialogue set

patterns of development for the rest of the century. When a new energy source was considered, a total energy accounting was produced. This accounting included the energy investment that would be required to develop the new source before it could make a significant contribution. In addition to environmental impacts all new industrial plants and processes also were judged on the basis of the social and economic impacts that would occur if they were--or were not--developed.

The resolution of energy supply and demand problems restored the confidence of the public in the United States. While foreign oil continued to be imported, the demonstrated possibility of increasing domestic oil exploitation and other energy-related technological developments proved to be an adequate restraint on foreign producers. Increased efficiency of all resource usage created higher degrees of national self-sufficiency. By the 1990's the United States was exporting proven technologies in all areas of resource development.

THE U.S. ROLE IN THE WORLD

The U.S. relationship with less-developed countries (LDC's) was complicated during the late 1970's and early 1980's by repeated and unsuccessful attempts on the part of resource rich LDC's to restrict the supplies of certain raw materials through artificial limitations on production and exports. Cartels were formed for such raw materials as bauxite, manganese, tin, and chromium. The North-South split deepened in the United Nations and in other international organizations on such issues as law of the sea, technology transfer, and legitimate trade arrangements for food and minerals. In Latin America, Brazil emerged as the leader of a unified Latin American Economic System.

U.S. relationships with the European Community (EC) suffered a slow deterioration during the late 1970's and early 1980's as uncertain access to resources contributed to increased pressures for trade protectionism and Government intervention to maintain artificially low currency exchange rates. The major trade negotiation within the General Agreement on Tariffs and Trade ended inconclusively. Within the EC the trend toward regional integration was interrupted. Efforts to achieve monetary union were unsuccessful, and internal economic policies remained largely autonomous.

Japan, which felt increasingly insecure as U.S. attention to East Asian developments receded and tension on the Korean peninsula increased, began to improve its relationships with the Peoples Republic of China (PRC) and other South Asian powers. An incipient East Asian co-prosperity sphere began to emerge, while U.S.-Japan economic and military ties suffered a slow erosion. This was expressed in periodic disputes concerning continued Japanese trade and investment restrictions.

As U.S. resource management improved in response to active Government policies and technological innovations during the late 1980's, the U.S. position in the world was partially restored, but without the predominant influence or global interventionist aspirations which characterized U.S. foreign policy in the 1960's and 1970's. The regional coalitions which had emerged during the late 1970's and early 1980's continued to figure importantly in international politics, but now with the United States occasionally lending its weight to one or the other coalition, depending upon U.S. interests. The United States began to serve as a mediator in intra-regional differences which threatened to undermine regional harmony and invite intervention by the Soviet Union and the Peoples Republic of China.

In effect, U.S. foreign policy stabilized on the basis of diplomatic and occasional military support for cohesive, regional coalitions which shared U.S. interests in preventing domination by America's adversaries.

U.S.-Soviet relations remained stable throughout the period, with the inevitable underlying tension expressed by occasional disputes on control of nuclear weapons and the threat posed by increased Soviet troop levels in Europe and the Far East. Increased political dissent in Eastern Europe and Soviet threats to use force against such countries as Romania, Yugoslavia, and Poland became an important source of discord between the Soviets and the United States. Border disputes between the Soviets and the PRC also became a diplomatic issue in the triangular relationship between the United States, the Soviet Union, and the PRC.

The relationship between the developed countries and LDC's improved during the late 1980's as the United States led a successful effort to negotiate export price guarantees and debt relief agreements for certain LDC's, including Brazil and Mexico. These policies were successful in stimulating trade and investment flows between the United States and Latin America. Relationships between developed and underdeveloped countries also improved in fields such as technology transfer, control of nuclear proliferation, and conflict management through a rejuvenated United Nations.

The U.S. relationship with the EC also improved in the late 1980's as successful resource management stimulated greater economic growth in Europe and increased levels of trade and investment between the United States and the EC. However, despite reduced protectionism and increased levels of economic exchange, the U.S. relationship with Europe never again achieved the intimacy which prevailed during the 1960's and 1970's. The European

states, having emerged from the traumatic period of the mid-1970's with their economies intact and in greater unity, now frequently departed from U.S. policy on various global issues and successfully resisted renewed U.S. efforts to achieve a unified North Atlantic community. Internally, the European Community resumed its evolution toward confederation, with greater foreign policy and domestic economic coordination but without the growth in supranational institutions.

Chronology of Major Events and Trends

Resource Allocations, Scenario R

Event Category	1976	1980	1985	1990	1995	2000
Demography						
			<ul style="list-style-type: none"> —Fertility rate equals 2.1 births per woman 			
			<ul style="list-style-type: none"> —Suburbs incorporated into central city boundaries 			
			<ul style="list-style-type: none"> —States adopt Federally approved zoning plans 			
			<ul style="list-style-type: none"> —Shifts from suburban living 			
			<ul style="list-style-type: none"> —back into the cities 			
Economics						
			<ul style="list-style-type: none"> —Average annual GNP growth is 3.2 percent 			
			<ul style="list-style-type: none"> —Tax benefits are given to industry to remain in urban environment. 			
			<ul style="list-style-type: none"> —Taxes are levied on all energy uses for support of energy R&D 			
			<ul style="list-style-type: none"> —Unemployment rate equals 6.5 percent 			
			<ul style="list-style-type: none"> —Federal Guarantees 			
			<ul style="list-style-type: none"> —for municipal securities 			
Energy and materials						
			<ul style="list-style-type: none"> —Resource Allocation Board emphasizes exploitation of domestic resources and conservation 			
			<ul style="list-style-type: none"> —Electricity generated primarily from coal and nuclear energy 			
			<ul style="list-style-type: none"> —Recycling grows into a major business 			
Human resources and life-style						
			<ul style="list-style-type: none"> —Federal Government takes over all public aid payments 			
			<ul style="list-style-type: none"> —Telecommunications promoted as a substitute for travel 			
			<ul style="list-style-type: none"> —Socialized health care program is established 			
The United States in international affairs						
			<ul style="list-style-type: none"> —U.S. withdraws from global dominance 			
			<ul style="list-style-type: none"> —United States exerts stabilizing influence on world affairs 			
			<ul style="list-style-type: none"> —United States exports resource development systems 			
			<ul style="list-style-type: none"> —Agreements are made with LDC's to assure U.S. access to raw materials 			
			<ul style="list-style-type: none"> —Cartels formed for key raw materials 			

Limited Growth, Scenario A

During the 1970's the United States became largely convinced that unlimited industrial expansion could not be supported without serious environmental impairment. Resentment by the less-developed nations that the developed countries were consuming a disproportionate share of world resources added to the national concerns. It was perceived that shortages of critical raw materials, increasing prices, and difficulties in achieving a stable relationship between energy demand and supply were leading to a serious economic crisis. The gathering ills seemed to validate the "limits to growth" philosophy that uncontrolled growth is intrinsically wrong and that it can only lead to ultimate economic disaster. The Government accepted deliberate limitations to growth as the only logical recourse and adopted policies that slowed the country's rate of economic expansion. Personal life-styles were altered, and there was a reduction in population growth rate. Low resource-consuming activities were substituted for material demands, and personal constraints were accepted that would have been largely unthinkable in 1970.

LIFE IN AMERICA

America ushered in the twenty-first century with an attitude of resignation. Deliberate Government efforts had succeeded in slowing the growth in all forms of demand and in easing pressures on domestic resources. The cost of achieving economic stability through limited growth policies was a reduction in socioeconomic and physical mobility coupled with little enthusiasm for risk-taking and adventure-seeking.

In the 1970's there was alarm that the unlimited industrial expansion would have catastrophic effects on the environment, with the attendant risk of serious resource depletion. Escalating resource prices were threatening to disrupt the economy, and eventual economic disaster was feared. In this atmosphere the "limits to growth" argument took root. Through the large presence of the Federal Government, economic growth was directed toward resource-conserving activities.

The slow GNP growth that characterized the U.S. economy also was reflected in the life-styles of the population. Telecommunications, for

example, was seen as being resource efficient and provided an acceptable alternative for business and personal contacts. Concentrated city life was seen as an economically efficient social system, and Federal policies were continuously adjusted to provide for urban restoration. Urban centers, which were the focus of economic life, increased in density as the growth of suburban sprawl slowed. The Federal Government, through extended revenue-sharing programs with the cities, tried to encourage migration from the low-density suburbs to the cities, where urban transit could help solve the problems of local transportation. By underwriting programs for urban development, the Government provided the cities with more possibilities for employment. With increased emphasis on urban centers, human services in health and education were more readily available, and the satisfaction of fundamental needs tended to help diminish societal tensions. By the close of the century the United States had achieved stability. The country was looking more inward than outward as the Government continued to exercise restraint on the nation's growth.

THE U.S. ROLE IN THE WORLD

It had become obvious by the mid-1980's that U.S. influence on events beyond its borders had been severely reduced, largely as a result of diminished economic growth and a lack of domestic political consensus to support global foreign policy objectives. The United States continued to maintain nuclear forces capable of preventing any direct Soviet or People's Republic of China threat to the territory of the United States or Latin America. However, the ability of the United States to intervene globally, to influence conflicts among less-developed countries (LDC's) or in Europe, and the U.S. leverage on international events generally were in decline throughout the period. There was greater flux in international relations, an increase in the level of tension and terrorism, spreading conflicts.

among LDC's, the re-emergence of old European rivalries, and greater Soviet influence in the Middle East, Africa, and Asia. Although a certain degree of consensus in the United States was re-established during the 1990's, this consensus was fragile, based on very limited means and ends, and aimed at accommodating and adjusting to rather than influencing foreign events.

U.S.-Soviet relations exhibited a certain comity which merely obscured underlying, basic incompatibilities in ideology and interest. Certain areas of common action did, of course, remain, including agreements on non-proliferation of nuclear weapons, maintenance of trade in raw materials and technology, agreements on limiting the development of new weapons systems, and the avoidance of nuclear war. However, beyond these common elements, U.S.-Soviet interaction was characterized by increased suspicion and doubts in the United States as to whether the relationship was mutually beneficial. These doubts among the U.S. public were reinforced by Soviet military spending which, because of an inability to expand its defense spending in the face of limited resources, continued to increase at rates more than twice those in the United States, and by the Soviet's increased ability to extend its influence globally while the United States displayed uncertainty and political decisiveness. The ultimate result of this disparity in power between the United States and the Soviet Union was a series of implied agreements legitimizing this improved Soviet position, particularly in large parts of Africa, Central Europe, and the Mediterranean.

The one area relatively free of Soviet influence continued to be Latin America, over which the United States asserted the Monroe Doctrine in defense of its vital interests on the continent. However, the United States was powerless to prevent increased guerrilla warfare. This implicit U.S.-

Soviet division of the world into spheres of influence, with the U.S. sphere truncated and under tenuous control, was the basis for a U.S.-Soviet accommodation in the mid- to late 1990's.

The U.S. relationship with LDC's was highly conflictual, marred by persistent and successful efforts on the part of LDC resource exporters to restrict their exports of raw materials. Successful cartels were established for such minerals as bauxite, manganese, chromium, and tin. Despite declining economic growth rates in developed countries, the Organization of Petroleum Exporting Countries (OPEC) cartel maintained its cohesion throughout the period and even expanded its membership to include Mexico and Brazil.

U.S. relations with its European allies became less interdependent strategically as the lack of foreign policy consensus in the United States led to a reduction in U.S. presence and deprived of credibility its treaty commitments to the defense of Europe. The increased political influence of protectionist forces within developed countries, which resulted from the slackening of economic growth, reversed the trend so evident in the 1960's toward free trade and investment. Amid increased protectionism, the developed country economic order gradually dissolved, first into regional blocks and then into uncoordinated national actions. While European Community institutions continued to function, they were progressively deprived of substance as most efforts to achieve cooperation in the spheres of trade and finance failed. The European-wide order was replaced by a developing entente between France and West Germany.

In the wake of U.S. withdrawal from its global commitments, Japan became increasingly isolated. Its defense treaty with the United States was

progressively deprived of substance; its trade links with the United States were severely strained by U.S. protectionism as well as the emergence of a strong labor union movement in Japan which also had protectionist instincts; its trade outlets in the European community were also blocked by increased European protectionism. As a result of these serious ruptures in its traditionally close relationships with Europe and the United States, Japan was forced to seek closer links with her immediate neighbors, including the People's Republic of China, the Soviet Union, Korea, the Philippines, Indonesia, and Vietnam.

Chronology of Major Events and Trends

Limited Growth, Scenario A

-18-

Event Category	1976	1980	1985	1990	1995	2000
Demography			↓Fertility rate equals 1.7 births per woman →		↓High-density nuclear cities dominate urban environment →	
Economics			↓GDP annual growth is 1.1 percent →	↓Permanent wage, price, profit, and interest rate controls are established →	↓Overhaul of tax laws put a greater burden on the rich →	↓Federal Government takes over municipal housing and transportation →
			↓Unemployment rate equals 7 percent →			
Energy and materials				↓Low growth policies limit exploitation of domestic resources →	↓Raw material resource rationing programs are established →	
Human resources and life-style				↓School curricula stress conservation and non-resource consuming pursuits →	↓Career satisfactions are challenged by avocational interests →	↓Telecommunications promoted as a substitute for travel →
The United States in international affairs				↓United States withdraws from a position of world leadership →	↓Developing countries form cartels for critical raw materials →	↓Increase in trade protectionism in developed countries →

Expansive Growth, Scenario B

By the end of the century the United States had strongly reaffirmed its belief in the ability of free enterprise to provide for dynamic growth. Faced with the need to revitalize a troubled economy by the late 1970's, the Government turned to the private sector, giving it increasing opportunity to develop with minimal regulatory constraints. Substantially funded R&D allowed a broad range of technology to find solutions to resource problems. With the successful application of technology to social needs came a dramatic reawakening of the "American Spirit." As the private sector showed its ability to identify and respond to national goals, the public sector --Government--reduced its relative size and propensity to intervene and control. With high emphasis on individualism and corporate achievement, the economy expanded rapidly.

LIFE IN AMERICA

The United States stepped into the twenty-first century with unbounded vitality. The last quarter of the century had produced a large, wealthy, vigorous society. Technology had successfully met the challenge of resource availability, and by the early 1980's several technologies had been developed that promised to put an end to energy and material supply problems. Growth in domestic availability of fossil-fuel resources was accomplished through the full exploitation of economically and environmentally acceptable sources. Increased use of coal and nuclear power for electricity, coal gasification, the tapping of geothermal energy, and the development of solar energy (particularly for space heating and air conditioning) contributed to satisfying the expanding demand for energy. Freedom from resource constraints encouraged a renaissance in the nation's pioneering and developmental spirit. This produced solutions that permitted continuation of life in the United States without serious change in the country's historic value structure and patterns of economic growth. Life-style patterns that had been developing at mid-century were able to continue. The movement of people to the suburbs, which had characterized the earlier part of the century, resulted in

successful establishment of suburban/urban corridors linking the spreading population--particularly in the Southwest, Southeast, and West Coast regions.

Among the most important features of the early 1980's was the reduction of the Government's involvement in the affairs of private business. The Federal Government, through subsidized research and development, provided the stimulus for technological growth. At the same time, private capital was given relatively free rein to promote commercialization. The market-place was able to function unfettered by regulatory controls. Available resources restored the country's expansionist impulses, and the growing national wealth was accelerated by strengthening of the private sector.

Laissez-faire policies had resulted in very high GNP growth, and the level of affluence attained produced a national sense of pride and good will. The reaffirmation of the free enterprise system brought with it a like reaffirmation of the individualism that had been the hallmark of the American character. With restoration of energy as a reliable and growing commodity, there seemed to be no limits to national growth.

THE U.S. ROLE IN THE WORLD

The United States maintained an active role in global politics. It projected its influence into all regions of the world and dominated market economy trade and financial patterns and institutions. It was a principal market for exports of less-developed countries (LDC's) and an important source of LDC technology and manufacturer goods imports. U.S. foreign policy orientation was European-centered, with its basic objectives remaining the defense of Europe from Soviet pressure. The United States sought greater influence over internal European developments in order to protect its trade and investment interests in the European Community (EC). The United States successfully opposed any movement toward genuine European integration, since

this was perceived as a threat to United States access to European markets and might enhance the autonomous power of the EC. U.S. policy toward LDC's was largely reactive, designed to maintain favorable terms of trade, suppress any challenges to the international economic order, and resolve any disputes among less-developed countries which threatened to escalate and involve the super powers.

U.S. strategic capabilities continued to grow throughout the period as did its ability to influence events in peripheral areas. The strategic superiority, soundly based on a growing economy and the continued European and Japanese fear of Soviet penetration, combined to preserve U.S. influence in major areas of the world.

The relationship of the United States with the Soviet Union increasingly reflected the shared interest between the two in suppressing LDC's and middle-range power challenges to the bipolar international system. This common interest in the status quo resulted in U.S. and Soviet agreement to maintain the division of Europe through enforcement of the protocols negotiated at the Conference on European Security and Cooperation, concluded in 1976.

U.S.-Soviet policies toward the LDC's were also parallel, although not actually coordinated, in that both nations sought to limit the transfer of military technology to less-developed countries, both opposed any basic changes in terms of raw material trade, and both intervened, sometimes jointly, to prevent destabilizing conflict. The United States and the Soviet Union also were successful in negotiating denuclearized zones in Latin America and South Asia. The major source of tension between the United States and the Soviet Union continued to be their respective positions in the Middle East and Africa, where their interests had not congealed,

and there was continued competition for influence with powerful regional states and revolutionary groups.

U.S. relationships with less-developed countries were extremely contentious, as LDC's resentment developed over unfavorable terms of trade with the United States. It was further exacerbated by the U.S. refusal to adhere to international constraints on seabed mining and the growing role of U.S. multinational companies in LDC economies. U.S. aid commitments failed to keep up with its GNP growth, and food donations and concessional sales declined relative to commercial exports. However, LDC resentment had only mild repercussions for the position of the United States. The cohesion of resource cartels dissipated as new extractive technologies expanding domestic petroleum supplies and increasing the usage of alternate fuels put pressure on the OPEC cartel and resulted in a division within OPEC between Saudi Arabia, Indonesia, and the Persian Gulf States on the one hand and the radical Arab states and Iran on the other.

U.S. relationships with the EC were characterized by Europe's strategic subordination to the United States. Europe achieved neither the political consensus necessary for an independent foreign policy nor the coordination of national economies needed for enhanced strategic capabilities. Lacking the means for a genuinely independent role in international relations and continuing to fear Soviet power--which was increasing throughout the period --Europe had no choice but to rely upon the U.S. defense commitment and the presence of U.S. troops.

The U.S. relationship with Japan also was somewhat strained throughout the period. U.S. demands for greater Japanese conformance with U.S. foreign policy objectives and for elimination of trade and investment restrictions

collided with the delicate balance of domestic political forces within Japan. Thus Japanese governments found themselves repeatedly jeopardizing domestic tranquility in order to lend the United States diplomatic support, and this generated continuous tension with the United States. The mutual security treaty continued to be the basis for Japanese national security policy, albeit with increasing Japanese domestic political opposition.

Chronology of Major Events and Trends

Expansive Growth, Scenario B

-24-

Event Category	1976	1980	1985	1990	1995	2000
Demography			<ul style="list-style-type: none"> — Fertility rate equals 2.7 births per woman → — Industrial decentralization supports small, low-density communities → — Continued suburban sprawl → 			
Economics			<ul style="list-style-type: none"> — Annual GNP growth is 4.9 percent → — Corporate income tax rate is reduced by 50 percent → — Federal Reserve adopts constant high growth policy → — Price controls are removed from all prime energy sources → — Social security is replaced by private pension plans → 			
Energy and materials			<ul style="list-style-type: none"> — Unemployment rate is 6 percent → — Vigorous exploitation of all domestic resources → — Electricity is generated primarily from coal and nuclear energy → — Economic production of synthetic gas from coal → — Development of agro-industrial complex → — Petroleum alternatives for transportation are developed → 			
Human resources and life-style				<ul style="list-style-type: none"> — Strengthening of individual ties to local community life → — Return to belief in the "American dream" → 		
The United States in international affairs			<ul style="list-style-type: none"> — United States continues to be a dominant power → — Many countries are resentful of United States wealth and strength → — Expanded mineral production in the United States weakens cartels → — OPEC dissolves → 			

Individual Affluence, Scenario C

By the end of the twentieth century the pessimism of the late 1960's and early 1970's had vanished. Concerns about the economic stability of the nation were largely a thing of the past. Although individuals and corporations prospered, it was largely government moves in the 1980's which had set the tenor for the country's economic stability. Effective Government programs encompassing energy and other resources finally took hold, and the Government was even influential in shaping population growth trends and where people lived and worked. Of course, technology played an important role in satisfying energy and other resource needs and in achieving desired environmental conditions. Here the Government played an important role in stimulating the development and exploitation of those technologies by the private sector. Indeed, other nations viewed the United States as a country that had "got it all together."

LIFE IN AMERICA

The American society reached the twenty-first century in a state of affluence. Through effective planning the Government was able to stimulate adequate development of domestic raw material resources. Technological advances in energy supply, which had been set in motion in the late 1970's and early 1980's, relieved shortages and the anxieties they had created. The economical development of coal gasification, together with applications of geothermal energy and solar energy, particularly for space heating, helped remove pressure on oil sources.

The Federal Government promoted zero population growth based on the premise that a stabilized population was necessary if the benefits of the American dream were to be realized for all its people. Both GNP per capita and disposable personal income per capita took up patterns of increase which continued throughout the remainder of the century. Available energy supplies and a healthy economy permitted the continued growth of capital and energy-intensive industries. An ever larger burden of industrial needs was being met by automation. Conditions of affluence permitted people to

find an increasing degree of self-expression through avocational interests in leisure and cultural pursuits.

Nuclear cities were the focus of both commercial and cultural activities. Decline in population growth made it easier to restore the vitality of urban life. Recognition of the interdependence of cities with the surrounding suburbs made it possible to raise the necessary taxes to provide for adequate public services.

The affluence in individual life-styles was seen to be the successful result of centralized governmental planning. Regulation of the behavior of key industries was used to assure equitable distribution of goods at environmentally and economically acceptable costs. Regulation was not theoretical and impractical, but realistic and acceptable to the private sector. Where technological advances relaxed pressures on prices, market forces were allowed to operate rather freely. As affluence increased, certain governmental services were transferred to the private sector with governmental regulation. Thus, while Government had a large presence, people's satisfaction made its control over the social process both tolerable and desirable.

THE U.S. ROLE IN THE WORLD

The United States, as it entered the 1990's, had become clearly ascendant in terms of military power, economic growth, influence over flow of goods and money, and the success of its domestic economic and political system. However, this new-found authority was exercised less to dominate events in foreign regions or preserve the status quo than to improve the human condition in authoritarian and less-developed countries. This greater concern with social equity and political liberty tended to direct U.S.

attention away from Europe; its approach toward Europe became less hegemonic and more concerned with encouraging the evolution of an autonomous European Community (EC), even at the cost of restrictive trade practices and declining U.S. influence on that continent. U.S. foreign policy became more concerned and directly involved in efforts to achieve increased development and more equitable distribution of wealth among LDC's even though this support entailed market and price guarantees for LDC exports.

Between the United States and the Soviet Union there developed substantial trade flows but very little cultural contact. The relationship was based upon the fundamental need to avoid a nuclear war and the subsidiary diplomatic requirements this entailed. Thus there were cooperative efforts to quell certain conflicts among other states for which international institutions were inadequate and continued efforts to negotiate arms limitations and non-proliferation of nuclear weapons.

A rough balance in U.S.-Soviet strategic forces was maintained, but at the cost of growing strain on the Soviet economy and a sharpening of Soviet internal debates regarding the allocation of scarce resources. These strains were exacerbated by continued underinvestment in, and inadequate production of, Soviet agriculture, which rendered the Soviets increasingly dependent upon U.S. grain exports and therefore increasingly vulnerable to diplomatic pressure from the United States.

U.S. relationships with the LDC's were increasingly cooperative.

U.S. economic growth and the stimulus this provided to LDC exports was a partial explanation for this growing détente with the LDC's. Equally important, however, was a basic and sympathetic change in the U.S. attitude toward its proper role in fostering economic development and political change among LDC's. This change entailed greater support for certain revolutionary movements, a more active U.S. Government sponsorship of technology transfer, higher aid levels, and a willingness to enter into commodity agreements and tariff preferences to enhance LDC income from exports to the United States. These measures were successful in removing the incentive for the development of resource cartels.

U.S. relationships with the European Community were close and cordial, based on a common recognition of interdependence in economics and security. While the U.S. economy remained a determining element in North Atlantic trade and investment patterns, the United States exercised relatively less control over U.S.-EC institutions as the period progressed. This increased tolerance for independent European foreign and domestic policies reflected a larger effort to encourage the development of a more independent, self-reliant Europe that in turn might remove some of the defense burden from the United States.

U.S. relationships with Japan continued to be intimate, shaped by their common interests in thwarting Soviet territorial ambitions in the Far East, by Japan's military dependence upon the United States

(expressed through the U.S.-Japan Security Treaty), and by their common desire to maintain democratic institutions in Japan. However, there were also mutual efforts to reduce the extent of Japanese dependence on U.S. military protection and to develop a more balanced, equal relationship. There was greater U.S. tolerance for residual Japanese protectionism and its repeatedly successful export drives, which were perceived as necessary and healthy for a trade-dependent nation such as Japan.

Chronology of Major Events and Trends

Individual Affluence, Scenario C

Event Category	1976	1980	1985	1990	1995	2000
Demography			<ul style="list-style-type: none"> —Fertility rate equals 1.7 births per woman → —Marriage rate declines → —Suburbs develop into tight rings around nuclear cities → —States adopt Federally approved zoning plans → —Federal guidelines are proposed for population distribution → 			
Economics			<ul style="list-style-type: none"> —Average annual GNP growth rate is 4.7 percent → —Suburbs taxed or annexed for support of central cities → —Federal Government regulates key industries, at the same time stimulating their growth → —Accelerated R&D spending spurs industrial expansion → —Government subsidizes large-scale technological job training → —Unemployment rate is 5 percent → 			
Energy and materials				<ul style="list-style-type: none"> —Vigorous exploitation of all domestic resources → —Electricity is generated primarily from coal and nuclear energy → —Economic production of synthetic gas from coal → —Petroleum alternatives for transportation are developed → —Development of agro-industrial complex → 		
Human resources and life-style				<ul style="list-style-type: none"> —Growth of worker democracies → —Bachelor's degree is compressed into three years → —Automated individual instruction is used at all educational levels → —Most assembly lines are controlled by computers → 		
The United States in international affairs			<ul style="list-style-type: none"> —United States continues to be a dominant power → —United States promotes economic expansion of LDC's through favorable trade agreement → —OPEC dissolves → 			

Hardships, Scenario D

The economic problems of the 1970's never were really solved; indeed they continued to grow. Energy prices climbed ever higher and kept an upward pressure on all prices. Capital shortages prevented fuller exploitation of domestic resources, with the result that the economy remained vulnerable to threats from various cartels. Despite the poor economic conditions, population growth remained high. Technological development was stunted due to the inability to adequately fund R&D programs. Failures in certain vital industries invited and even required Government takeover and nationalization. No Administration seemed capable of developing a cohesive and effective economic policy. Ad hoc programs managed to keep the severe conditions of the 1930's from being repeated, but evidence of demoralization could be found in the crowded, constricted urban life-style that characterized this lingering depression.

LIFE IN AMERICA

The United States entered the twenty-first century burdened by innumerable problems. During the previous 25 years, economic growth had been severely affected by the high cost of energy, especially since much of this energy was imported. Social processes had not been able to harmoniously resolve environmental conflicts, and shortages in materials had seriously retarded industrial growth.

The economic problems of the 1970's ultimately led to Government control of fundamental U.S. industries. Capital resources were not able to meet the long-term investment needs of industry, and the Federal Government was forced to subsidize various sectors of the economy. Continuing national economic stress kept the Government occupied with ad hoc measures and made effective planning impossible. Research and development programs were not sufficiently funded.

Technological developments concerning alternative energy sources and the development of new raw material sources progressed very slowly. Inability to economically meet resource demands and uncertainty in the availability of resource supplies continued to make economic recovery impossible.

In the late 1970's and early 1980's the Government attempted to gain voluntary compliance on the part of all sectors of the economy (industry, labor, and the consumer) with needed economic austerity. Failure of voluntary restraints then led to governmental attempts to directly control what it termed irresponsible institutional behavior. But the self-protecting posture of traditional private interests and the continued strain on resource suppliers made Government programs ineffective.

Despite attempts at pump-priming, GNP growth was small because of the high cost of energy, and the disproportionate increase in labor costs over productivity was due in large part to the failure of needed technological progress. To further complicate the economic situation, population growth was higher than it had been in the 1970's. Despite problems of crowding, people began moving from outlying suburbs back into the cities, in part to offset the high cost of transportation. The Government saw this movement as a means of achieving an economical concentration of delivery of vital services and encouraged the trend by giving priority to development of urban transportation for central cities. But the inability of Government to expend the necessary funds limited development. Urban renewal also was deficient in funding,

and the generally poor conditions of the city made for stressful living. With increasing population and a questionable economy, individual well-being, as measured both by material wealth and leisure time, declined in the United States in comparison to what it would have been if the trends of the early 1960's and early 1970's had continued.

THE U.S. ROLE IN THE WORLD

Beset by its own internal problems, the United States drifted into a position of increasing isolation from world affairs. The United States was perceived by others as xenophobic and suspicious, susceptible to sudden and unpredictable assertions of military force to protect U.S. prestige, but incapable of sustained, consistent action in world politics. The isolation which enveloped the United States in the 1980's was not coordinated with U.S. allies and occurred despite increased military capabilities and the diplomatic influence of America's adversaries. The unpreparedness of the international system for such a change created great suspicion and tension in international relations, caused the reappearance of old, irredentist conflicts, and heightened terrorism and aggressive behavior by regional giants.

U.S. diplomacy became a series of ad hoc, intermittent, and unilateral assertions of force, usually in defense of what it considered to be its "sphere of influence" in Latin America or in response to some imagined insult to its prestige. U.S. military power was great, but it was useless as an instrument of diplomacy because of the lack

of U.S. domestic consensus on the legitimate purposes to which force should be applied. In sum, the U.S. capacity for effective action in international relations was being sapped by domestic social unrest and economic stagnation.

U.S. relationships with the Soviet Union were highly contentious and prone to miscalculation and conflict. There was continual risk that the Soviets, as they probed U.S. weaknesses in Europe, Asia, and Latin America, might trespass on some unspoken boundary and trigger an outbreak of conflict. The United States, as it withdrew from areas of previous influence, often proclaimed interests it was unwilling to defend and then suddenly applied force on behalf of objectives for which there was no warning or precedent.

This continuous state of conflict and uncertainty eroded agreements which had previously expressed common interests between the United States and the Soviet Union. This was true of such agreements as SALT, Mutual and Balanced Force Reductions, the protocols of the Conference on European Security and Cooperation, the Nonproliferation Treaty, and the Test Ban. In addition to the erosion of these important agreements, the growing suspicion between the two superpowers reduced the sphere for common action and eliminated any possibility of joint efforts to halt the transfer of strategic technologies to new states or to avoid escalation of peripheral conflicts. This suspicion also spilled over into the economic realm, as the U.S. Government tightened export controls on sales of technology and limited credits available to the Soviet Union for imports of U.S. products.

U.S. relationships with less-developed countries were also highly contentious, with occasional direct conflict. The slackening of demand for raw materials among developed countries deprived less-developed countries of maximum resource leverage, but sporadic embargoes of certain imported materials did occur. The failure among developed countries to exploit alternative energy sources provided the Organization of Petroleum Exporting Countries (OPEC) with continued leverage and cohesion and made the cartel increasingly attractive to other non-OPEC countries with significant petroleum production.

U.S. relationships with its European allies were increasingly distant and contentious. The U.S. withdrawal of its troops from Europe, and the dubious credibility of its remaining formal commitments to the defense of Europe, placed the European Community (EC) in a position of great insecurity, since the U.S. withdrawal of troops was not preceded by any reduction in the Soviet threat. Moreover, Europe was unable to achieve the common political will, economic power, or military capabilities to sustain a credible defense against Soviet pressure. Thus there was a scramble for some safe diplomatic posture on the part of individual European states, which usually entailed a dissociation from alliances with the United States. Europe became neutral in the U.S.-Soviet disputes and developed a conciliatory posture toward increasingly powerful Communist parties in Europe as well as with the Soviet Union.

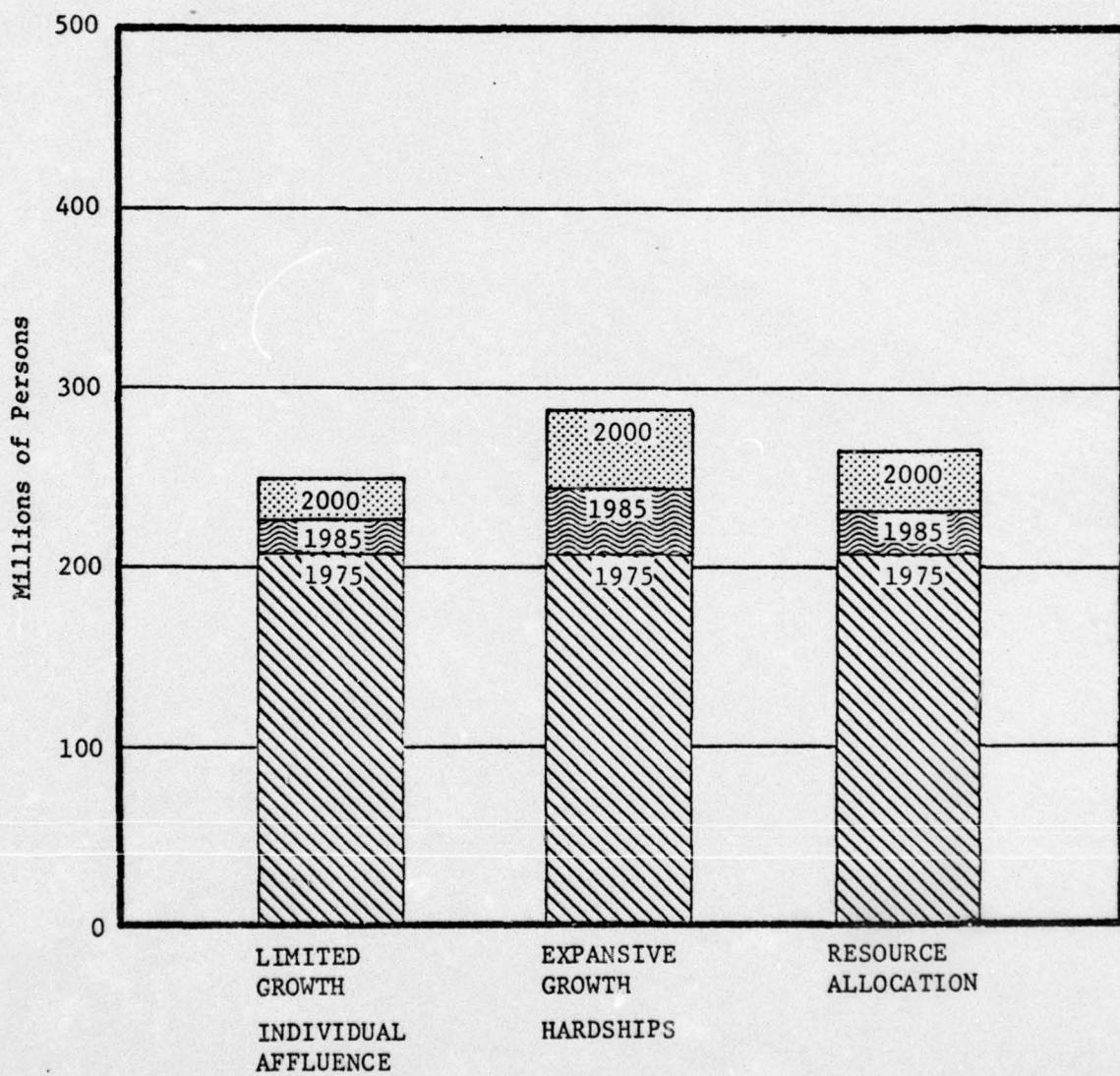
U.S. relationships with Japan deteriorated throughout the period as the U.S. renunciation of the obligations of its security treaty left Japan dangerously isolated. This stimulated a search on the part of Japan for accommodation with the Soviet Union, as the Japanese were forced into concessions to the Soviets in order to settle the Kuril Islands dispute. Closer ties with the Peoples Republic of China were also cemented, and preferential trade agreements were concluded with certain resource rich LDC's, including Brazil. Generally, traditional trade patterns were severely disrupted by U.S. and European protectionism, and there was a shift in these patterns toward a greater regional orientation. Japanese investment increasingly flowed toward the Peoples Republic of China and the Soviet Union, both of which invited sizable Japanese investments in their unexploited raw materials.

Chronology of Major Events and Trends

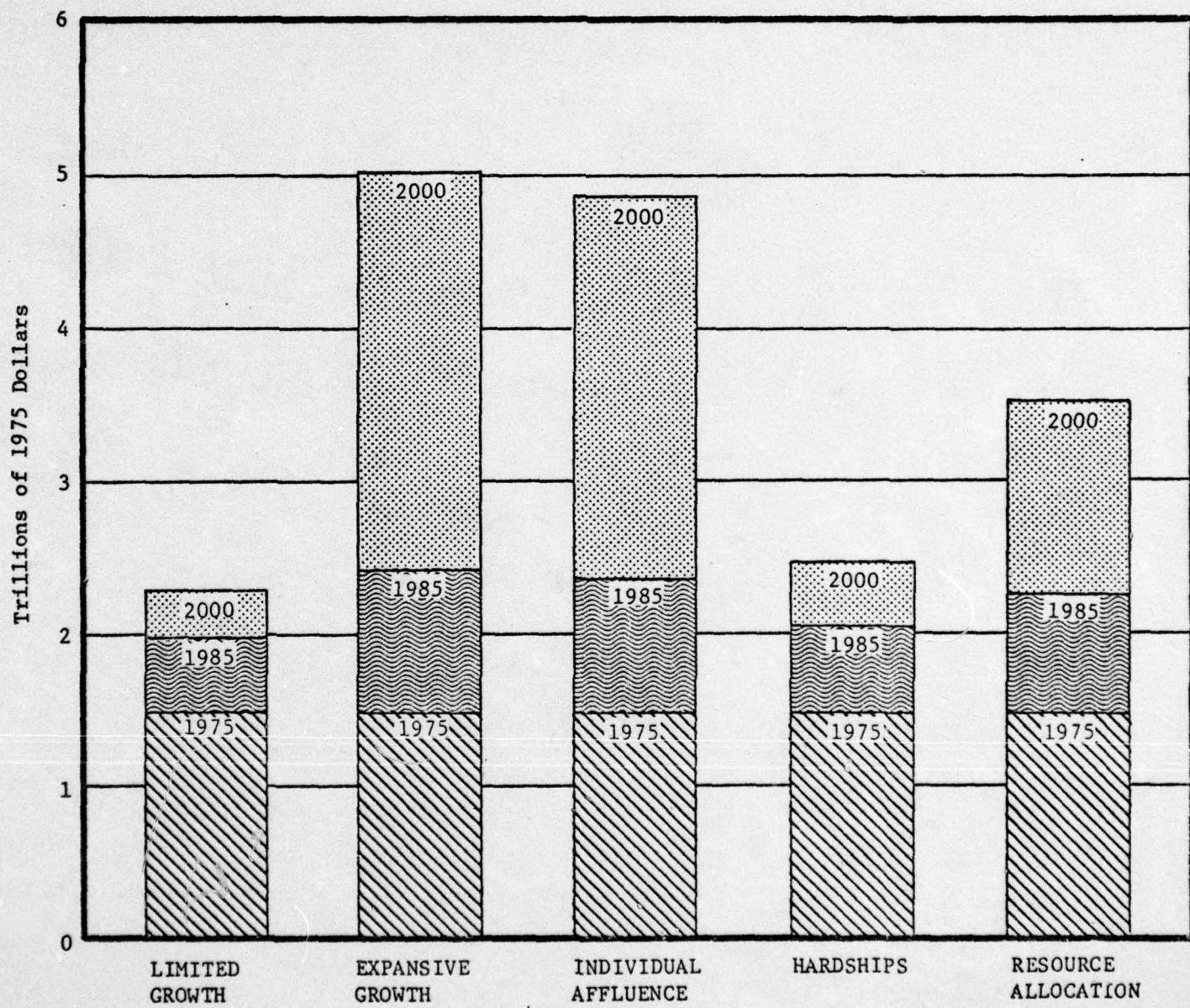
Hardships, Scenario D

Event Category	1976	1980	1985	1990	1995	2000	
Demography			<ul style="list-style-type: none"> —Fertility rate equals 2.7 births per woman → —Increased flow of people into crowded cities → —Increasing problems in urban living → 				
Economics			<ul style="list-style-type: none"> —Average annual GNP growth rate is 1.6 percent → —Capital shortages occur in many industries → —Emergency powers are granted Federal Government to ban strikes etc. → —Indexing system of wages, prices, and profits is established → 	<ul style="list-style-type: none"> —Agricultural output hurt by unavailability of environmentally acceptable pesticides → —Unemployment rate is 9 percent → 			
Energy and materials				<ul style="list-style-type: none"> —Coal production problems lead to shortfalls in supplies → —Nuclear safety and waste disposal problems remain unsolved → —R&D funds fall short of program requirements → 	<ul style="list-style-type: none"> —A publicly controlled petroleum company is established → 		
Human resources and life-style					<ul style="list-style-type: none"> —Federal Government is forced to take over all public aid payments → —Many colleges are forced to close due to economic failure → —Decline in growth of professionals and technicians → 		
The United States in international affairs						<ul style="list-style-type: none"> —United States becomes isolationist and fortress-like → —European community and Japan restrict their markets to the United States → —Sporadic embargos against the United States occur for key imported materials → 	

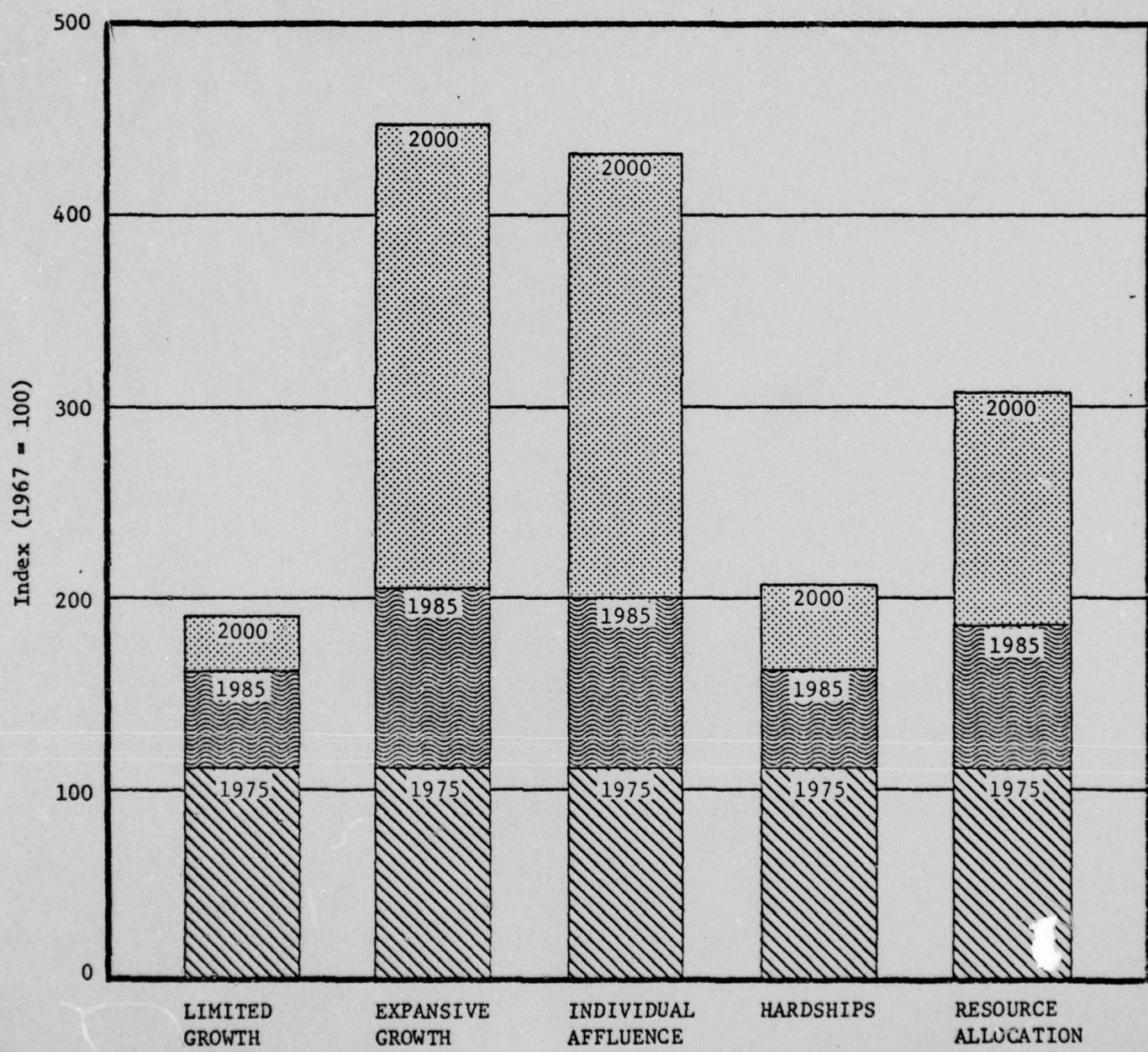
TOTAL U.S. POPULATION



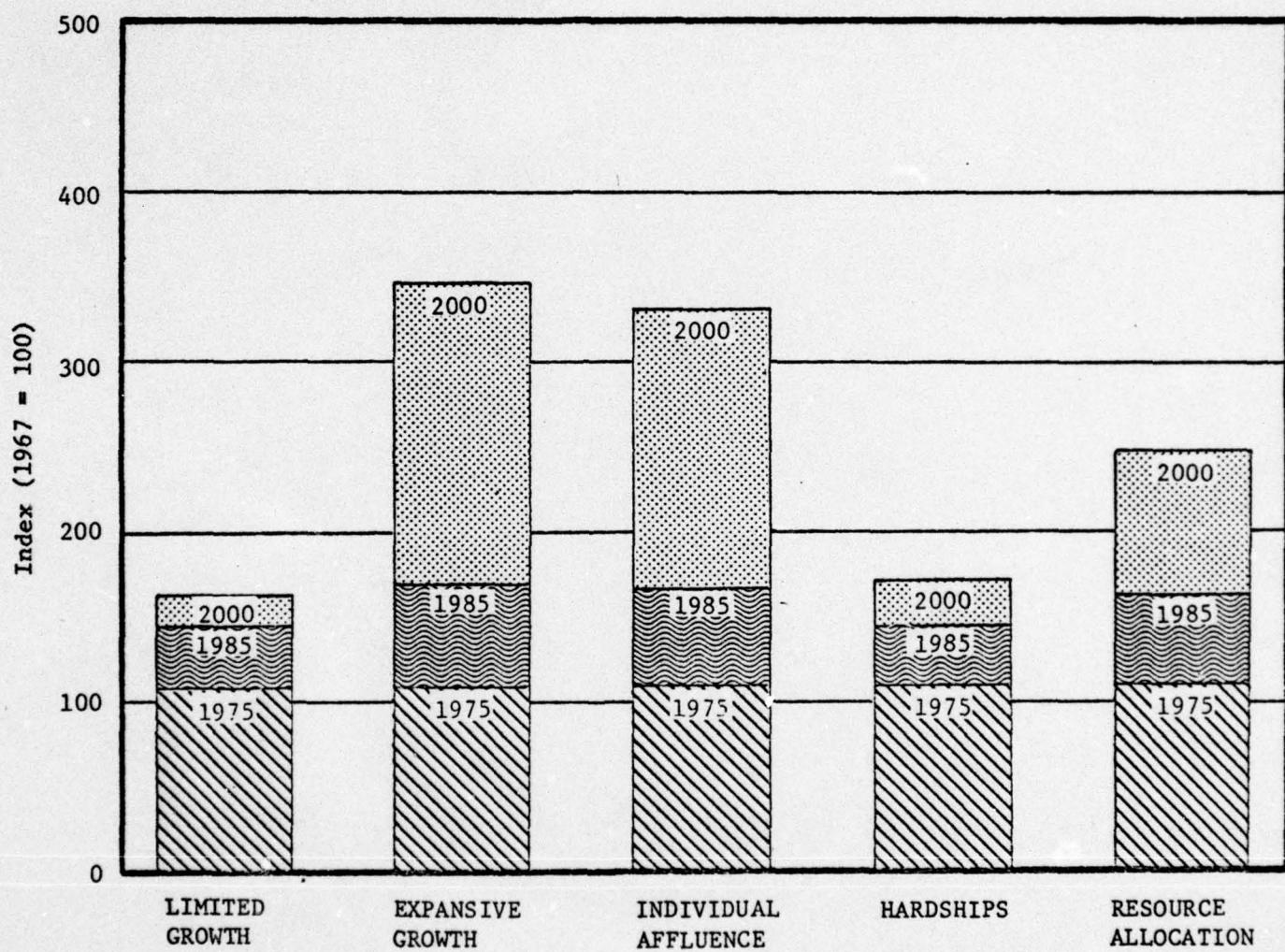
GROSS NATIONAL PRODUCT



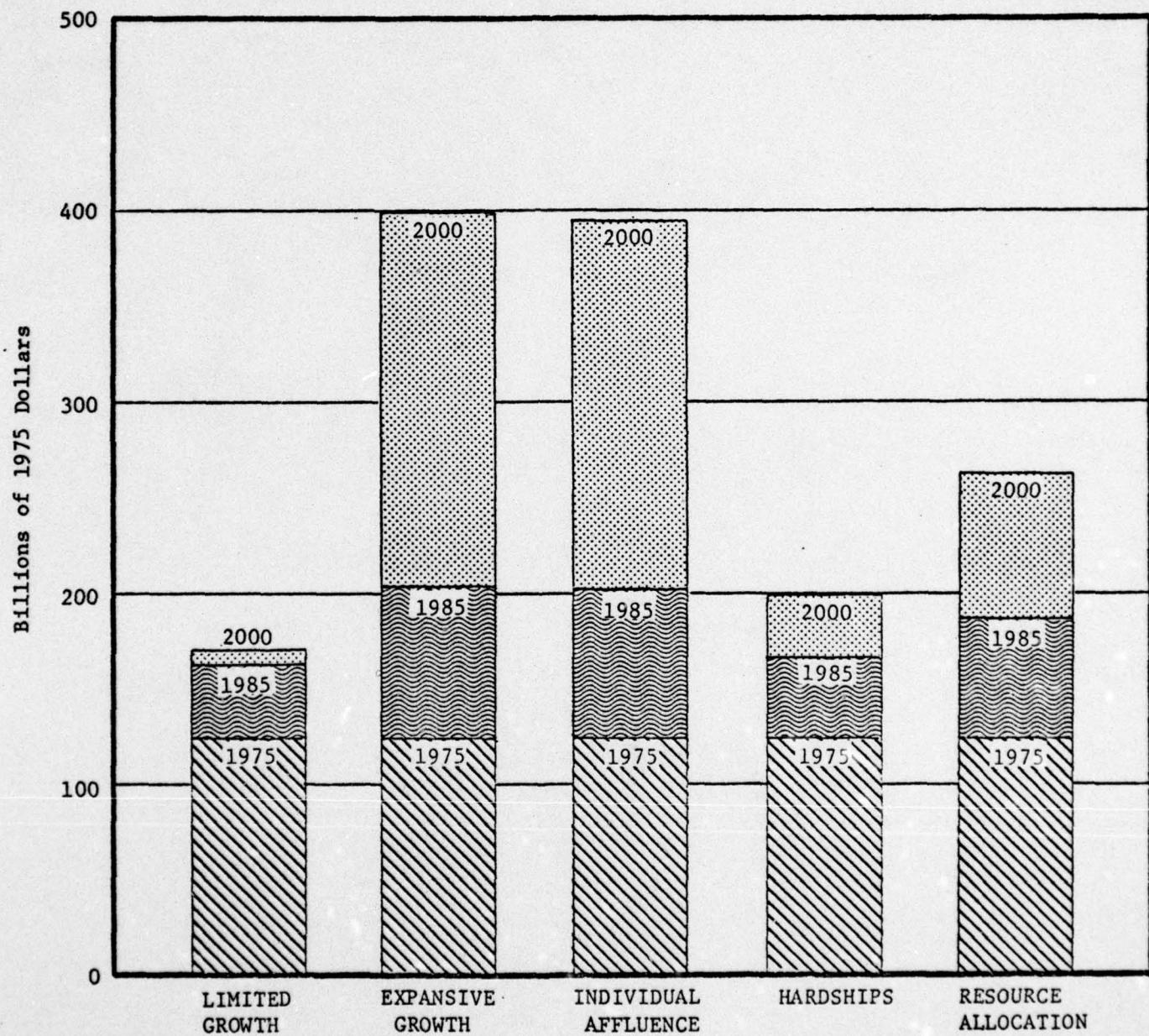
INDEX OF INDUSTRIAL PRODUCTION (1967 = 100)



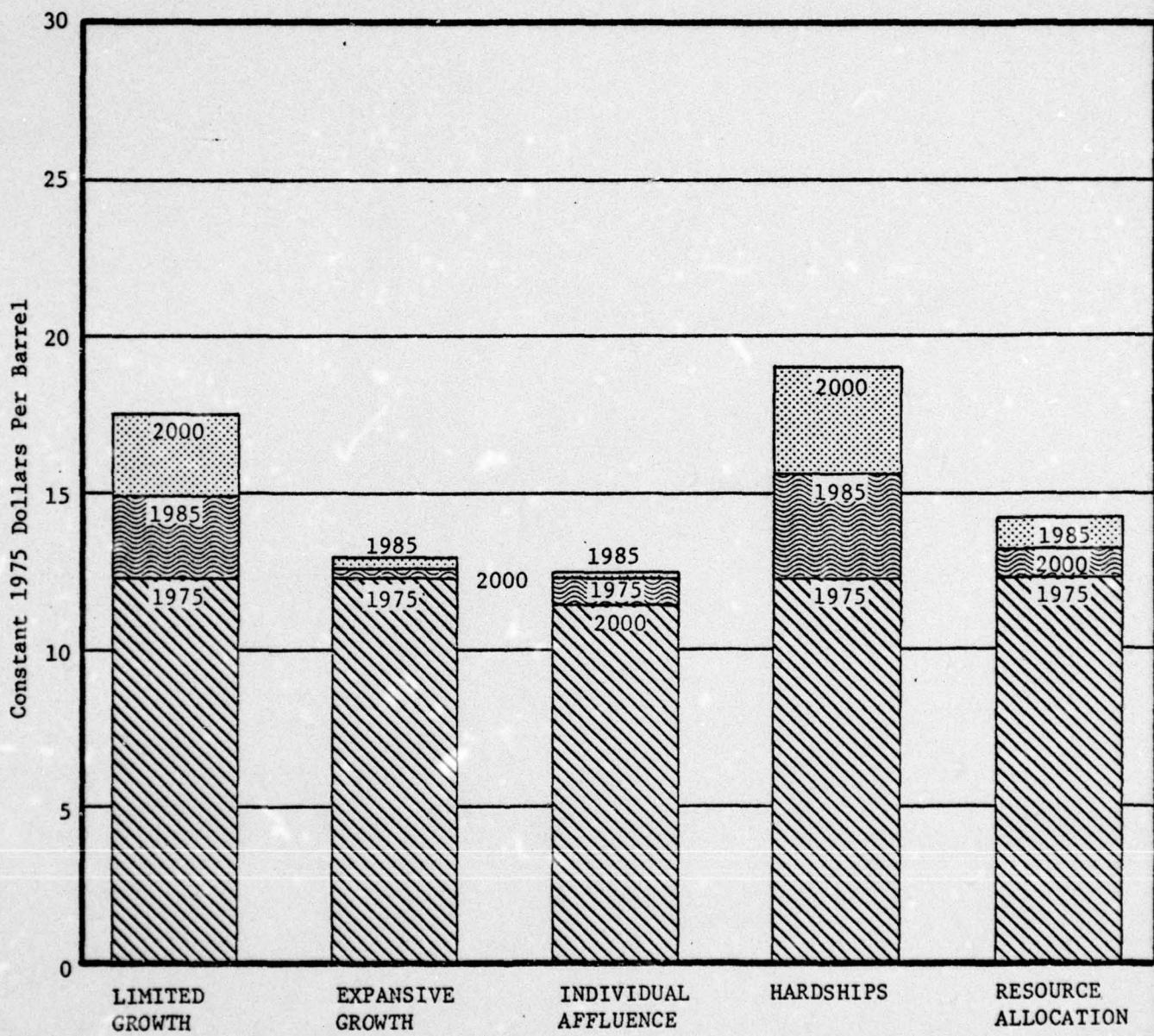
BUSINESS PRODUCTIVITY
(Output Per Manhour of All Persons in the Private Business Sector)



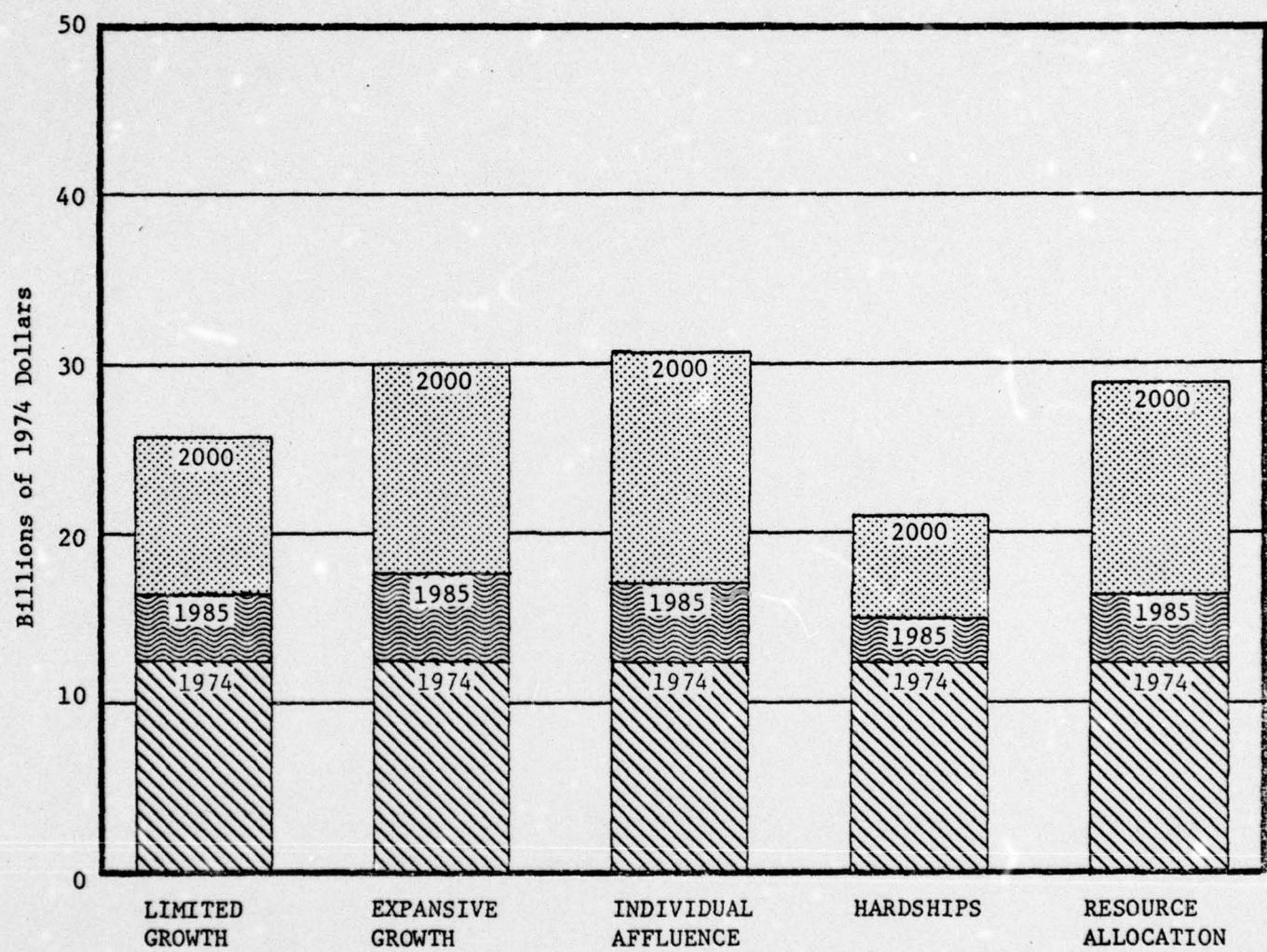
PERSONAL CONSUMPTION EXPENDITURES FOR TRANSPORTATION
(Goods and Services)



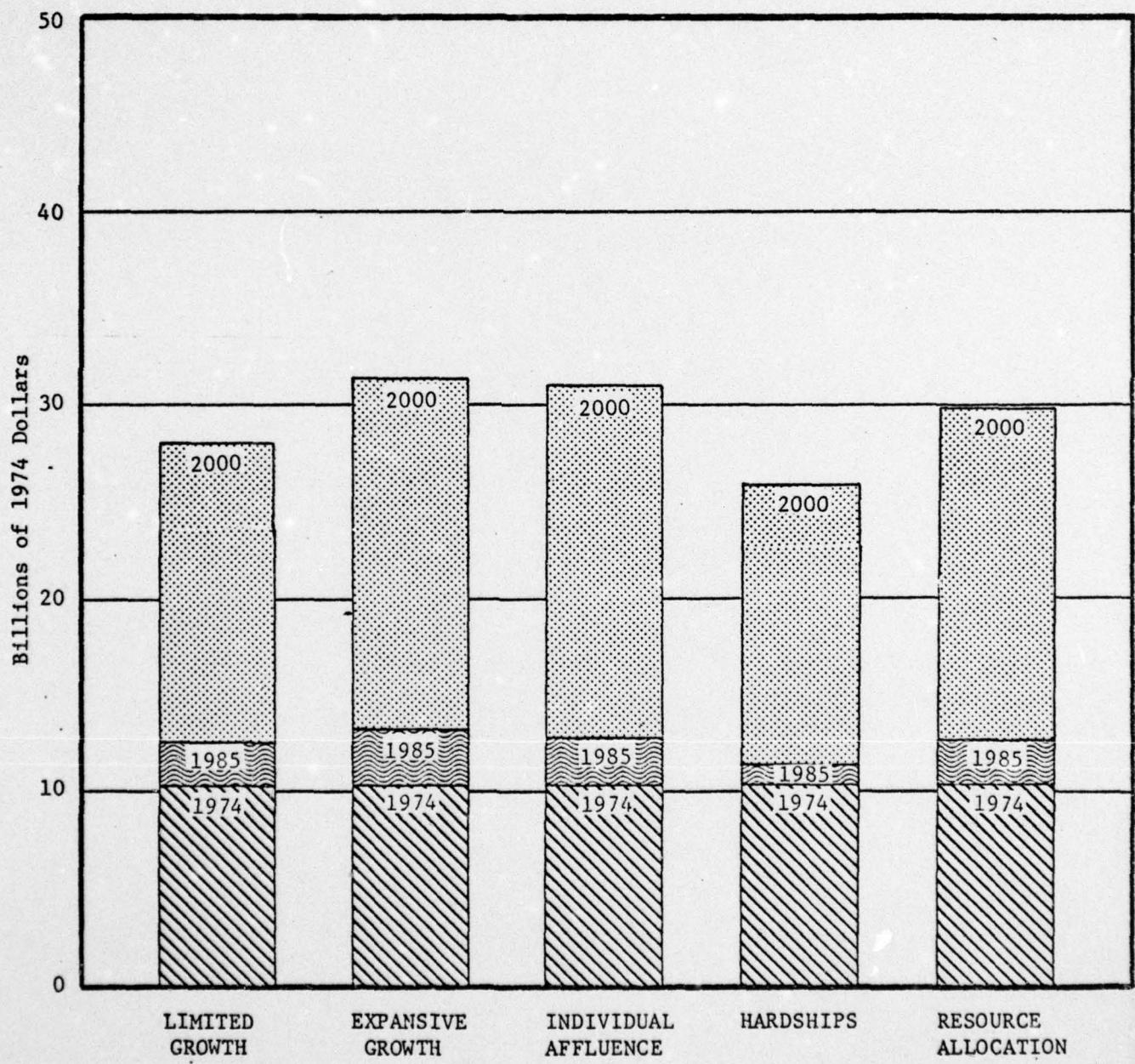
ESTIMATED LANDED COST IN UNITED STATES OF
IMPORTED CRUDE PETROLEUM FROM SAUDI ARABIA



U.S. EXPORTS TO EUROPEAN COMMUNITY
(FRANCE, UNITED KINGDOM, AND WEST GERMANY)



U.S. EXPORTS TO JAPAN



U.S. EXPORTS TO LATIN AMERICA
(BRAZIL, MEXICO, AND VENEZUELA)

